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REMARKS

The present Office Action indicates that claims 1-40 of the above-identified US Patent Application were reviewed, with the result that claims 1-5, 7, 8, 10-25 and 27-40 were rejected under 35 USC §103, and claims 6 and 9 (which depend from claim 1) and claim 26 (which depends from claim 21) were deemed to recite allowable subject matter. However, in Applicant's response filed December 30, 2002 (Paper No. 8), dependent claims 6, 18, 26 and 38 were canceled and their limitations incorporated into their respective parent claims 1, 14, 21 and 34. Because the present Office Action states that the limitations of *cancelled* claims 6 and 26 recite allowable subject matter, Applicant is unsure as to whether the Examiner intended to reject independent claims 1 and 21 and their remaining dependent claims 2-5, 7-9, 22-25 and 27-29, wherein independent claims 1 and 21 include the allowable subject matter of as-filed claims 6 and 26 and wherein at least dependent claims 5 and 25 cover the identical subject matter of as-filed claims 6 and 26.

Applicant's present response attempts to address the rejections set forth in the present Office Action in spite of this confusion.

As indicated above, Applicant has amended the specification to correct a typographical error, and has amended the claims as set forth above. More particularly:

Independent claims 1, 14, 21 and 34 have been amended to clarify that the

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joint structure (e.g., 32) is between the components (e.g., 38 and 42) and a portion of the mesh (14) extends outside of the joint structure (32) to define a flexible jumper (e.g., 36) that extends out from between the components (38,42).

Dependent claims 3 and 23 have been amended to address a matter of antecedence.

Applicant believes that the above amendments do not present new matter. Favorable reconsideration and allowance of claims 1-5, 7-17, 19-25, 27-37, 39 and 40 are respectfully requested in view of the following remarks.

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Incomplete Office Action

In addition to the above concerns regarding the pendency of the claims, Applicant notes that, contrary to MPEP 707.07(f), the present Office Action does not acknowledge or rebut Applicant's amendments or arguments presented in his preceding response filed December 30, 2002 (Paper No. 8).³ In particular:

(a) the 35 USC §103 rejections and the explanations given in the present Office Action are identical in substance to those in the previous Office Action (Paper No. 7) - only the order of the references has changed, such that the present Office Action has merely repeated the rejections of the previous Office Action; and

(b) the present Office Action lacks a section entitled "Response to Applicant's Arguments" (or something similarly titled) normally found in an office action filed in response to an applicant's response, and in which the examiner sets forth his or her grounds as to why an applicant's amendments and arguments were not effective to overcome a rejection.

Applicant respectfully but urgently requests that the Examiner respond to the amendments and arguments set forth below in order to clarify the issues and record for purposes of appeal.

³ "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

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Prior Art Rejections

In the Office Action, all claim rejections are under 35 USC §103 and are based on U.S. Patent Nos. 4,529,836 to Powers et al. (Powers), 5,136,122 to Kwitkowski et al. (Kwitkowski), 6,083,772 to Bowman et al. (Bowman), 6,280,584 to Kumar et al. (Kumar) and 5,591,034 to Ameen et al. (Ameen). Applicant respectfully traverses each of the rejections in view of the following comments.

Rejection of Claims 1-3, 5, 7, 8 and 10-13 in view of Powers, Kwitkowski & Bowman

Independent claim 1 recites an electrical circuit assembly (e.g., 30 in Figure 3) comprising two components (e.g., FET's 38 and conductor 42) bonded together with a joint structure (e.g., 32) therebetween, wherein the joint structure (32) comprises a mesh (14) infiltrated by a solder material (16), and wherein "a portion [e.g., 36] of the mesh [14] extend[s] outside of the joint structure [32] and from between the components [38,42] to define a flexible jumper [36] to a first of the components [38,42]."

Under this rejection, none of the references was applied by the Examiner as disclosing or suggesting a joint structure between two components and formed of a solder-infiltrated mesh, with a portion of the mesh extending out from between the two

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components to define a flexible jumper. While Powers discloses a matrix (21,30) that is formed of a mesh (10-13) infiltrated with solder (14) and attaches a circuit element (23,32) to a substrate (22,33), nothing in Powers suggests extending a solder-free portion of the mesh (10-13) out from beneath the circuit element (23,32) to form a flexible jumper. While Kwitkowski discloses a strip (16) that comprises a solder-free mesh (34) between a pair of end sections (30,32), the end sections (30,32) are not infiltrated with solder to form a joint structure between two components and the solder-free mesh (34) does not extend out from between two components. While Bowman discloses a conductive strap 163 for a semiconductor die 110, the strap 163 is not sandwiched between the die 110 and a substrate 140 to which the die 110 is mounted, but instead contacts the top surface of the die 110. Therefore, the combination of Powers, Kwitkowski and Bowman does not yield Applicant's joint structure (32) comprising a solder-free portion of mesh (14) that extends out from beneath a component (38) to form a flexible jumper (36).

In view of the above, Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a) as applied to independent claim 1, as well as its dependent claims 2, 3, 5, 7 and 8.

Independent claim 10 recites an electrical circuit assembly (e.g., 70 in Figures

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5 and 6) comprising two components (component 78 and conductor 82) bonded together with a joint structure (72), wherein the joint structure (72) comprises a mesh (14) infiltrated by a solder material (16), and wherein the first component (78) comprises multiple electrical devices (76) with a first set of terminals (74) bonded together with the joint structure (72) so as to hold the electrical devices (76) together.

None of the references applied under this §103 rejection discloses or suggests the use of a joint structure (72,73) that comprises a mesh (14) infiltrated with solder (16) and that, in addition to bonding a circuit component (78) to a substrate, also bonds together multiple electrical devices (76) that constitute the component (78).

Therefore, Applicant also respectfully requests withdrawal of this rejection under 35 USC §103(a) as applied to independent claim 10, as well as its dependent claims 11-13.

**Rejection of Claim 4 in view of
Powers, Kwitkowski, Bowman & Ameen**

Claim 4 depends from claim 1, and this rejection adds only Ameen to the prior art applied to claim 1, with Ameen being applied for teaching a heatsink. As with the other references applied by the Examiner against claim 1, Ameen fails to disclose or suggest a joint structure between two components and formed of a solder-infiltrated

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mesh, with a portion of the mesh extending out from between the two components to define a flexible jumper. Therefore, the combination of Powers, Kwitkowski, Bowman and Ameen does not yield Applicant's joint structure (32) recited in claim 4, and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a).

**Rejection of Claims 14, 15 and 17-20 in view of
Powers, Kwitkowski, Bowman & Kumar**

As previously noted, claim 18 was cancelled by Applicant's response of December 30, 2002, and therefore the following will not address the rejection of claim 18.

Independent claim 14 recites a semiconductor assembly (e.g., 30 in Figure 3) comprising a heat-generating semiconductor device (e.g., 38) that is attached to a conductor (e.g., 42) on a substrate (e.g., 40) with a joint structure (e.g., 32) located between the device (38) and conductor (42). Similar to claim 1, the joint structure (32) comprises a mesh (14) infiltrated by a solder material (16) that bonds together the semiconductor device (38), the conductor (42) and the mesh (14), and wherein "a portion [e.g., 36] of the mesh [14] extend[s] outside of the joint structure [32] and from between the semiconductor device (38) and the conductor (42) to define a flexible jumper [36] to the semiconductor device [38]. . ."

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This rejection adds only Kumar to the prior art applied to claim 1, with Kumar being applied for teaching a compliant bond structure 20 formed of a mesh 25 infiltrated by a compliant metal 40 and having a CTE higher than the compliant metal 40. As with the other references was applied by the Examiner under this rejection, Kumar fails to disclose or suggest a joint structure between two components and formed of a solder-infiltrated mesh, with a portion of the mesh extending out from between the two components to define a flexible jumper. Therefore, the combination of Powers, Kwitkowski, Bowman and Kumar does not yield Applicant's joint structure (32) recited in claim 14, and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a) as applied to independent claim 14, as well as its dependent claims 15, 17, 19 and 20.

**Rejection of Claim 16 in view of
Powers, Kwitkowski, Bowman, Kumar & Ameen**

Claim 16 depends from claim 14, and this rejection adds only Ameen to the prior art applied to claim 14, with Ameen being applied for teaching a heatsink. As with the other references applied by the Examiner to reject claim 14, Ameen fails to disclose or suggest a joint structure between two components and formed of a solder-infiltrated mesh, with a portion of the mesh extending out from between the two

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components to define a flexible jumper. Therefore, the combination of Powers, Kwitkowski, Bowman, Kumar and Ameen does not yield Applicant's joint structure (32) recited in claim 16, and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a).

Rejection of Claims 21-23, 25 and 27-32 in view of Powers & Bowman

Independent claim 21 recites the method corresponding to the structure of independent claim 1, and as such requires two components (e.g., FET's 38 and conductor 42 in Figure 3) bonded together with a joint structure (e.g., 32) therebetween, wherein the joint structure (32) is formed to comprise a mesh (14) infiltrated by a solder material (16) and "a portion [e.g., 36] of the mesh [14] extends outside of the joint structure [32] and from between the components [38,42] to define a flexible jumper [36] to a first of the components [38]."

Under this rejection, only Powers and Bowman were applied, i.e., Kwitkowski was not applied along with Powers and Bowman as was the case for the rejection of claim 1. As such, the combination of Powers and Bowman does not yield Applicant's joint structure (32) comprising a solder-free portion of mesh (14) that extends out from beneath a component (38) to form a flexible jumper (36).

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Therefore, Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a) as applied to independent claim 21, as well as its dependent claims 22, 23, 25, 27 and 28.

Independent claim 30 recites the method corresponding to the structure of independent claim 10, and as such requires two components (component 78 and conductor 82 in Figures 5 and 6) bonded together with a joint structure (72), wherein the joint structure (72) comprises a mesh (14) infiltrated by a solder material (16), and wherein the first component (78) comprises multiple electrical devices (76) with a first set of terminals (74) bonded together with the joint structure (72) so as to hold the electrical devices (76) together.

None of the references applied under this §103 rejection discloses or suggests the use of a joint structure (72,73) comprising a mesh (14) infiltrated with solder (16) and which, in addition to bonding a circuit component (78) to a substrate, also bonds together multiple electrical devices (76) that constitute the component (78).

Therefore, Applicant respectfully also requests withdrawal of this rejection under 35 USC §103(a) as applied to independent claim 30, as well as its dependent claims 31 and 32.

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**Rejection of Claims 33-35 and 37-40 in view of
Powers, & Bowman & Kumar**

As previously noted, claim 38 was cancelled by Applicant's response of December 30, 2002, and therefore the following will not address the rejection of claim 38.

Dependent claim 33 depends from claim 30. This rejection adds only Kumar to the prior art applied against claim 30, with Kumar being applied for teaching a compliant bond structure 20 formed of a mesh 25 infiltrated by a compliant metal 40 and having a CTE higher than the compliant metal 40. As with the other references applied by the Examiner against claim 30, Kumar fails to disclose or suggest a joint structure between two components and formed of a solder-infiltrated mesh, with a portion of the mesh extending out from between the two components to define a flexible jumper. Therefore, the combination of Powers, Bowman and Kumar does not yield Applicant's joint structure (32), and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a) as applied to dependent claim 33.

Independent claim 34 recites the method corresponding to the structure of independent claim 14, and as such requires a heat-generating semiconductor device (e.g., 38 in Figure 3) that is attached to a conductor (e.g., 42) on a substrate (e.g., 40)

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with a joint structure (e.g., 32) located between the device (38) and conductor (42), wherein the joint structure (32) comprises a mesh (14) infiltrated by a solder material (16) that bonds together the device (38), the conductor (42) and the mesh (14), and wherein "a portion [e.g., 36] of the mesh [14] extend[s] outside of the joint structure [32] and from between the semiconductor device (38) and the conductor (42) to define a flexible jumper [36] to the semiconductor device [38]. . . ."

Under this rejection, only Powers, Bowman and Kumar were applied, i.e., Kwitkowski was not applied along with Powers, Bowman and Kumar as was the case for the rejection of claim 14. As such, the combination of Powers, Bowman and Kumar does not yield Applicant's joint structure (32) comprising a solder-free portion of mesh (14) that extends out from beneath a component (38) to form a flexible jumper (36), and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a) as applied to independent claim 34, as well as its dependent claims 35, 37, 39 and 40.

**Rejection of Claim 24 in view of
Powers, Bowman & Ameen**

Claim 24 depends from claim 21, and this rejection adds only Ameen to the prior art applied to claim 21, with Ameen being applied for teaching a heatsink. As with the other references applied by the Examiner to reject claim 21, Ameen fails to

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disclose or suggest a joint structure between two components and formed of a solder-infiltrated mesh, with a portion of the mesh extending out from between the two components to define a flexible jumper. Therefore, the combination of Powers, Bowman and Ameen does not yield Applicant's joint structure (32) recited in claim 24, and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a).

**Rejection of Claim 36 in view of
Powers, Bowman, Kumar & Ameen**

Claim 36 depends from claim 34, and this rejection adds only Ameen to the prior art applied to claim 34, with Ameen being applied for teaching a heatsink. As with the other references applied by the Examiner to reject claim 34, Ameen fails to disclose or suggest a joint structure between two components and formed of a solder-infiltrated mesh, with a portion of the mesh extending out from between the two components to define a flexible jumper. Therefore, the combination of Powers, Bowman, Kumar and Ameen does not yield Applicant's joint structure (32) recited in claim 36, and Applicant respectfully requests withdrawal of this rejection under 35 USC §103(a).


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Closing

In view of the above, Applicant believes that all rejections to his claims have been overcome, and that the claims define patentable novelty over all the references, alone or in combination, of record. It is therefore respectfully requested that this patent application be given favorable reconsideration.

Should the Examiner have any questions with respect to any matter now of record, Applicant's representative may be reached at (219) 462-4999.

Respectfully submitted,

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